Public Witness Testimony of

Joshua Lederberg, Ph.D.

Sackler Foundation Scholar
Rockefeller University

On behalf of the

Friends of the National Library of Medicine

Submitted to the House of Representatives

Committee on Appropriations,

Subcommittee on Labor, Health & Human Services,

Education & Related Agencies

April 20, 1999

1555 Connecticut Avenue, NW, Suite 200, Washington, DC 20036-1126
(202) 462-0992, Fax (202) 462-9043, email: fnlm@aol.com, www.fnlm.org

Statement by Dr. Joshua Lederberg

On National Library of Medicine

It is a privilege to be here today and I thank you for inviting me to testify. I would like to begin by congratulating the Congress for its far-sighted support of medical research over the years. There are many worthy competing claims for federal dollars, but you have been steadfast in your belief that supporting biomedical scientific research is a sound investment in the nation's physical and economic health. In the interest of "full disclosure," I am proud to note that most of my own work in genetics has been supported in major part by tax dollars, as have the overall medical research programs at Wisconsin, Stanford, and Rockefeller University, where I have worked during the past 50 years. I gratefully acknowledge that fact when I publish. Innumerable studies have shown the cost-effectiveness of these investments, even when measured in narrowest economic terms, not to mention their human benefit to the health of our citizens, and to the world's. As generous as it is, the support for research remains at only a few percent of our total national health expenditures.

I am here today as a member of the Friends of the National Library of Medicine, a nonprofit organization of medical organizations and of individuals who support the world's largest medical and scientific library. I also have the privilege of serving on the Library's Board of Regents, and I chair the Subcommittee on Research and Development. As this Committee is well aware, the Library is an important part of the National Institutes of Health. Over the years, you and the Congress as a whole have recognized that the information programs of the Library are a vital part of the biomedical research enterprise continuum. Access to up-to-date scientific information is critically important for training students in the health professions. It ensures that those taking care of patients can make use of the latest research findings. It is an integral part of the research process providing the knowledge base upon which scientists build and announce new discoveries so that they may be critically reviewed by peers. These roles demonstrate that the National Library of Medicine

1555 Connecticut Avenue, NW, Suite 200, Washington, DC 20036-1126
(202) 462-0992, Fax (202) 462-9043, email: fnlm@aol.com, www.fnlm.org

has a central part to play in our fight against disease. Support for the NLM's programs is indispensable for the efficiency and success of laboratory research and application to health needs. Funding of the NLM merits parity with the growth of the NIH budget as a whole.

The National Library of Medicine is today recognized as a primary source of reliable health information, not only for scientists and the health professions, but also the general public. NLM's immense MEDLINE databank of 11 million references and abstracts, now accessible freely on the World Wide Web, is searched 180 million times a year—one-third of these inquiries are by public. This is an amazing record of achievement that has not received much attention.

Because my own field is genetics, I was especially heartened when, 11 years ago, the Congress anticipated the growing importance of molecular biology and created the National Center for Biotechnology Information as part of the NLM. Your foresight proved accurate, for the past decade has seen a virtual explosion of genomic information. Today, the Center maintains immense databanks that receive this information from scientists worldwide, organizes it, and creates sophisticated tools that allow the data to be used in making further discoveries. The Center's success is based on a simple formula that states that more data plus more use equals more discovery.

The Center's GenBank database of DNA sequence information now contains some 3 million sequences with more than 2 billion base pairs. The Web site where GenBank and other NLM services such as MEDLINE are made freely available receives some 800,000 queries per day from 100,000 scientists and others around the world. About three quarters of this is MEDLINE searching, the rest is GenBank. In addition to academic institutions, major biotechnology and pharmaceutical firms are among the heaviest users of the this Web site. They search GenBank and use sophisticated computational tools created by the Center's scientists to conduct comparative sequence analysis.

The Center's scientists not only maintain GenBank but they also created a very popular Web-based system for accessing NLM's MEDLINE. This system, called PubMed, has revolutionized the way

MEDLINE is searched. It is powerful, flexible, and easy to use, and it provides links to an increasing variety of supporting information such as complete articles on publishers' Web sites. The popularity of MEDLINE on the Web has led the Library to develop a new Web-based service called MEDLINE*plus*. MEDLINE*plus* provides access to a wide variety of consumer-oriented health information from many authoritative sources, including, of course the NIH. This new service that began just 6 months ago has been widely praised.

As a newly appointed Regent, I was gratified to discover how diverse the Library's programs are. Given my background, I was well versed in the services of the National Center for Biotechnology Information, and of course all health professionals and scientists are familiar with MEDLINE. Other programs, such as the Visible Human Project, also have great potential to benefit biomedical science and health care. I know this committee has heard about how the very large image data sets of the Visible Male and Visible Female are being used under a free licensing arrangement by more than 1,000 scientists around the world to develop new ways to view the body for teaching, diagnosis, surgical simulation, and many other uses.

Similarly, the National Library of Medicine is a key player in seeing that the health community is prepared to take advantage of the Next Generation Internet. The NLM has sponsored, through the Institute of Medicine, widely consulted reports on medical data privacy and on how telemedicine can improve health care delivery. Awards by the Library over the past several years are supporting a variety of projects in telemedicine, advanced imaging techniques, and other areas that apply high performance computing and communications techniques. One aspect of this activity has important international implications: the Multilateral Initiative on Malaria improves the electronic communications capability of African malaria researchers as part of a broad-based attack on this devastating disease that continues to claim millions of lives. In yet another area, the Library has created a number of widely used data resources in environmental health, hazardous substances, and toxicology. They are relied on by many different groups—from scientists, to emergency medical teams, to community and environmental activists.

I should note these successes of the Library have been accompanied by a necessary growth in the staff, particularly of the National Center for Biotechnology Information. This growth, combined with the inexorable pressure of more books and journals arriving at the Library daily, presents a problem that NLM Director Lindberg and NIH Director Varmus are well aware of. The NIH is now looking at a variety of possible solutions. This is a continuing issue about which the Regents of the NLM have expressed their concern, and about which the committee will hear more in the future.

I appreciate this opportunity to testify on behalf of a truly remarkable institution. The American people, through your support over the years, have been amply repaid in the many valuable communications programs offered by the Library. I believe that continued public support for the National Library of Medicine is a wise investment in the future. I hope you will continue on the path of doubling the budget for the NIH, including the NLM, over the next five years.

Thank you.

1555 Connecticut Avenue, NW, Suite 200, Washington, DC 20036-1126
(202) 462-0992, Fax (202) 462-9043, email: fnlm@aol.com, www.fnlm.org